REMARKS

Claims 1-12 are pending in this application. Claims 1 and 9 are amended to more particularly and distinctly define the scope of the present invention. Applicant submits that no new matter has been introduced into the application by these amendments.

Claim Rejections - 35 USC §103(a)

Claims 1-12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,910,526 to Donnangelo et al. (hereinafter "Donnangelo") in view of U.S. Patent No. 6,512,481 to Velazquez et al. (hereinafter "Velazquez"). Claims 1-12 also have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,249,252 to Dupray (hereinafter "Dupray") in view of Velazquez.

Claim 1 as presently amended recites positioning a target mobile unit when the target mobile unit is unable to measure a direction of arrival of a signal from a base station serving the target mobile unit by obtaining information from mobile units located within a predetermined distance of the target mobile unit and base stations. The present invention is related to a method for positioning a mobile unit using measurements taken by neighboring mobile units or base stations in the case that the target mobile unit is unable to measure a direction of a signal from the

serving base station for some reason, such as multipath scattering. The present invention discloses as follows:

> ... however, the target mobile unit 20, despite being equipped with an adaptive antenna, is unable to accurately report a direction of arrival because of multipath caused by buildings 24, 26. ... where a mobile unit 20 cannot accurately report direction of arrival information ... the system 10 can employ neighboring mobile units 18, 22, n. The neighboring mobile units 18, 22, n are instructed to measure and report information related to the target mobile unit's 20 position so that the radio network controller (RNC) 12, for example, may compute the target mobile unit's 20 position despite the target mobile unit's 20 inability to report accurate direction of arrival information.

(See paragraph 0019). In accordance with the present invention, location finding of the target mobile unit is not based on reporting from the target mobile unit, but reporting from neighboring mobile units or base stations. Since the target mobile unit is unable to determine the direction of arrival of a signal from the serving base station, measurements of nearby neighboring mobile units are utilized in positioning the target mobile unit.

In contrast, in Donnangelo, a line of sight between an observer aircraft and a target aircraft is established and there is no obstacle for communicating directly to the target aircraft. In Donnangelo, secondary surveillance radar (SSR) transmits interrogation signals and the signals are received by the observer aircraft and the target aircraft. The observer aircraft determines the direction of the received signal and the target aircraft generates, and transmits, an identification or altitude signal. Upon receipt of the identity or altitude signal at the observer aircraft, the direction

of the target aircraft is determined with respect to the direction of travel of the observer aircraft. In Donnangelo, the direction of travel is determined based on direct reporting from the target aircraft which is capable of receiving signals from the SSR and transmitting signals to the observer aircraft. There is no need for reporting from neighboring aircrafts other than the target aircraft. Donnangelo fails to disclose a scheme of utilizing neighboring mobile units due to an inability of a target mobile unit to provide accurate measurements. Therefore, claim 1 is not unpatentable over Donnangelo.

The Examiner also rejected claims 1-12 over Dupray. Dupray is related to a method for locating a mobile station using a plurality of estimators, whereby enhancing the accuracy of location estimation. Dupray fails to disclose a scheme of utilizing neighboring mobile units when a target mobile unit is unable to report the direction of arrival from the serving base station. What is disclosed in Dupray is a system for enhancing accuracy of direction estimation using additional measurements in addition to a measurement from the target mobile station. Dupray discloses as follows:

> by utilizing wireless signal measurement from a variety of sources ... additional location enhancements can be obtained. (See column 23 lines 59-64).
>
> by combining even insufficient wireless location measurements from divergent wireless communication systems, accurate location of an MS 140 is possible. For example, [by] if only two GPS satellites are detectable, but there is an additional reliable wireless signal

> measurement from, e.g., a terrestrial base station 122, then by triangulating using wireless signal measurements derived from transmissions from each of these three sources, a potentially reliable and accurate MS location can be obtained. (See column 24 lines 14-22, emphasis added).
>
> ... if a target MS 140 detects two GPS satellite transmissions and is able to subsequently transmit the GPS signal measurement ... to an additional satellite capable of determining additional MS location measurements ... a potentially reliable and accurate MS location can be obtained. (See column 24 lines 28-36, emphasis added).
>
> ... when locating a target MS 140 may, if therein overlapping coverage of two wireless communication technologies and the MS supports communications with both, repeatedly switch back and forth between the two thereby providing additional wireless signal measurements for use in locating the target MS 140. (See column 25 lines 29-34, emphasis added).

Dupray discloses a scheme of utilizing multiple measurements for enhancing accuracy of location estimation. In Dupray, positioning is based on measurements at or communication from the target mobile station. In Dupray, the target mobile stations is not unable to detect direction of arrival from the serving base station. Additional measurements, whether it is performed by the target mobile station or not, are utilized to enhance the accuracy of the positioning. As the foregoing excerpts disclose, in Dupray, the target mobile station generates additional measurements from a terrestrial base station, transmits additional signals to a satellite subsequently, or provides additional measurements from two wireless communication technologies. Therefore, in Dupray, location finding of the target mobile station is performed using the measurements by the target mobile station

and target mobile station's inability to measure is not considered. Dupray fails to disclose a scheme of utilizing measurements by other mobile stations due to the target mobile station's inability to measure the direction of arrival of a signal from the serving base station. Therefore, claim 1 is not unpatentable over Dupray.

With respect to claim 9, claim 9 is related to a system for positioning a target mobile unit when the target mobile unit is unable to measure a direction of arrival of a signal from a base station serving the target mobile unit. Claim 1 recites a data processing unit which receives location information of the target mobile unit from mobile units located within a predetermined distance of the target mobile unit and base stations and calculates a location of the target mobile unit based on the information. As stated with respect to claim 1, both Donnangelo and Dupray fail to disclose a scheme of utilizing measurements by other mobile stations due to the target mobile station's inability to measure the direction of arrival of a signal from the serving base station. Therefore, claim 9 is not unpatentable over either Donnangelo or Dupray.

With respect to claims 2-8 and 10-12, these claims are dependent claims of claims 1 and 9, respectively. Therefore, it is believed that these dependent claims are also allowable for the same reasons presented above.

Based on the arguments and claim amendment presented above, withdrawal of the rejection of claims 1-12 is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing amendment and remarks, Applicant respectfully submits that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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